

BUMEDINST 6240.10  
BUMED-24  
3 Feb 93

BUMED INSTRUCTION 6240.10

From: Chief, Bureau of Medicine and Surgery  
To: All Ships and Stations

Subj: STANDARDS FOR POTABLE WATER

Ref: (a) DoD Directive 6230.1 of 24 Apr 78 (NOTAL)  
(b) OPNAVINST 5090.1A (NOTAL)  
(c) Safe Drinking Water Act, Public Law 93-523, as Amended (NOTAL)  
(d) Title 40, Code of Federal Regulations Part 141, (40 CFR 141), National Primary Drinking Water Regulations (NOTAL)  
(e) Federal Register, Vol. 56, No. 20, 30 Jan 90 (56FR3526) (NOTAL)  
(f) Federal Register, Vol. 56, No. 110, 7 Jun 91 (56FR26460) (NOTAL)  
(g) Title 40, Code of Federal Regulations, Part 143, (40 CFR 143), National Secondary Drinking Water Regulations (NOTAL)  
(h) STANAG 2136, NATO Standardization Agreement, Minimum Requirements of Water Potability for Short Term Issue (NOTAL)  
(i) QSTAG 245, Edition 2, American-British-Canadian-Australian Armies Quadripartite Standardization Agreement, Minimum Requirements for Water Potability (Short and Long Term Use) (NOTAL)  
(j) ABC NAVSTAG 23C, American-British-Canadian-Australian Naval Quadripartite Standardization Program, Quality Standards for Potable Water (NOTAL)  
(k) NAVMED P-5010-5, Manual of Naval Preventive Medicine, Chapter 5, Water Supply Ashore (NOTAL)  
(l) NAVMED P-5010-6, Manual of Naval Preventive Medicine, Chapter 6, Water Supply Afloat (NOTAL)  
(m) BUMEDINST 5450.157 (NOTAL)

Encl: (1) National Primary Drinking Water Regulations (NPDWRs), Treated Water Quality Standards  
(2) National Secondary Drinking Water Regulations (NSDWRs), Secondary Maximum Contaminant Levels

1. Purpose. To establish potable water standards for the Navy and Marine Corps, and to prescribe the use of DD 686, Fluoride/Bacteriological Examination of Water and DD 710, Physical and Chemical Analysis of Water.

2. Cancellation. NAVMEDCOM Instruction 6240.1.

3. Policy and Agreement

a. Policy. References (a) and (b) established the policy of compliance by the Department of the Navy with NPDWRs implemented by reference (c) and published in references (d), (e), and (f). NSDWRs contained in reference (g), and amended by references (e) and (f) must also be followed where mandated by State law. In other areas, the secondary maximum contaminant levels are optional, reasonable goals for Navy and Marine Corps drinking water. NPDWRs may be modified by the Bureau of Medicine and Surgery (BUMED) for Navy drinking water systems afloat and overseas. Maximum contaminant levels for Navy drinking water systems are listed in enclosures (1) and (2).

b. International Agreements. Outside of the United States this instruction applies to Navy and Marine Corps facilities consistent with international agreements, status of force agreements, or host country laws.

(1) Reference (h) sets minimum requirements for potability of drinking water to be used by North Atlantic Treaty Organization forces when operating on land, issued to troops in combat zones, or in any strict emergency situation.

(2) Reference (i) is an agreement between the Armies of the United States, United Kingdom, Australia, and the Canadian Forces to adopt minimum requirements for potability of drinking water to be issued to troops in combat zones or any other strict emergency situations.

(3) Reference (j) gives the United States Navy, the Royal Navy, the Royal Canadian Navy, and the Royal Australian Navy assurance that potable water delivered to each other's ships from installations under their cognizance meets certain minimum standards of quality.

4. Regulations. Mandatory regulations for bacteriological quality, physical and chemical characteristics, and radioactivity will be those in references (d), (e), and (f) or of those States granted primary enforcement authority. References (k) and (l) discuss the application of these regulations to shore stations and ships respectively and are available through normal supply channels.

5. Regulations Outside the United States. In foreign countries, Navy and Marine Corps installations classified as suppliers of water must follow substantive and procedural requirements of references (d), (e), and (f), or the host country, whichever is more stringent. Requests to deviate from this requirement must

be submitted in writing to the Chief, Bureau of Medicine and Surgery (MED-24), 2300 E Street, NW, Washington, DC 20372-5300, via the cognizant Navy environmental and preventive medicine unit (NAVENPVNTMEDU), and the Navy Environmental Health Center, 2510 Walmer Avenue, Norfolk, VA 23513-2617.

## 6. Responsibility

a. Ashore, routine sampling and reporting of potable water quality at Navy and Marine Corps facilities, is a command responsibility per reference (b). The Naval Facilities Engineering Command (NAVFACENGCOM) has general cognizance over Navy and Marine Corps water system operation, maintenance, monitoring, and reporting. The Medical Department is assigned an advisory role concerning potable water supply by reference (b). Reference (k) requires the performance of special purpose bacteriological and chemical analysis of potable water supplies, as necessary, to make recommendations for correction of sanitary defects. Sampling results from special surveys by the Medical Department do not apply toward satisfying the reporting requirements of references (d), (e), and (f).

b. Afloat, the responsibility for routine chlorine or bromine residual testing and coliform bacteriological analysis of potable water rests with the Medical Department, which will be guided by reference (l). Routine chemical analysis of potable water aboard ship is not required. If chemical contamination of shipboard potable water is suspected, the Medical Department must ask for specific chemical testing, from a NAVENPVNTMEDU, as described in reference (m), or from the preventive medicine department of a Navy medical facility. The ship's commanding officer must report noncompliance with these standards to the appropriate type command.

## 7. Monitoring Frequency

a. Testing frequency for determining compliance with this instruction at shore commands must comply with the requirements of references (d), (e), and (f).

b. Testing frequency for determining compliance with applicable standards of this instruction for afloat commands must comply with the requirements of reference (l).

## 8. Laboratory Certification

a. Samples, to be considered for standards compliance, must be analyzed by laboratories certified by the State or the Environmental Protection Agency (EPA).

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b. Measurements for turbidity, halogen residuals, temperature, and pH may be performed by any person acceptable to the State or regional EPA administrator.

9. Technical Assistance. Assistance with potable water problems may be requested from the following:

- a. NAVENPVNTMEDUs per reference (m).
- b. Preventive medicine departments of naval hospitals and clinics.
- c. NAVFACENGCOM engineering field divisions.

10. Forms. DD 686 (11-73), Examination of Fluoride/Bacteriological Water, S/N 0102-LF-000-6860 and DD 710 (4-53), Physical and Chemical Analysis of Water, S/N 0102-LF-007-2100, are available from the Navy Supply System and may be requisitioned per NAVSUP P-2002D. Afloat commands must use a water log in place of DD 686 for routine record keeping within the command.

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Stocked:  
Naval Aviation Supply Office  
Physical Distribution Division Code 103  
5801 Tabor Avenue  
Philadelphia, PA 19120-5099

NATIONAL PRIMARY DRINKING WATER REGULATIONS (NPDWR)  
TREATED WATER QUALITY STANDARDS

1. Contaminant levels for inorganic chemicals (effective  
1 January 1993):

Contaminant	MCLG mg/L <sup>1</sup>	MCL mg/L	AL mg/L <sup>2</sup>
Asbestos	7 million fibers/L longer than 10 micrometers	7 million fibers/L longer than 10 micrometers	
Arsenic		0.05	
Barium	2	2	
Cadmium	0.005	0.005	
Chromium	0.1	0.1	
Copper	1.3		1.3 <sup>3</sup>
Lead	0		.015 <sup>4</sup>
Mercury	0.002	0.002	
Nitrate (as N)	10	10	
Nitrite (as N)	1	1	
Total Nitrate and Nitrite (as N)	10	10	
Selenium	0.05	0.05	
Fluoride	4	4	

<sup>1</sup> Maximum contaminant level goal (MCLG). The maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MCLGs are nonenforceable health goals.

<sup>2</sup> Action level (AL). Concentrations of lead or copper in water that determine, in some cases, whether a water system must

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install corrosion control treatment, monitor source water, replace lead service lines, and undertake a public education program.

<sup>3</sup> The copper action level is exceeded if the concentration of copper in more than 10 percent of tap water samples properly collected during any monitoring period is greater than 1.3 mg/L (i.e., if the "90th percentile" copper level is greater than 1.3 mg/L).

<sup>4</sup> The lead action level is exceeded if the concentration of lead in more than 10 percent of tap water samples properly collected during any monitoring period is greater than 0.015 mg/L (i.e., if the "90th percentile" lead level is greater than 0.015 mg/L).

2. Contaminant levels for volatile organic chemicals (VOCs)  
(effective 1 January 1993).

Contaminant	MCLG mg/L	MCL mg/L
Benzene	0	0.005
Carbon tetrachloride	0	0.005
1,2-Dichloroethane	0	0.005
1,1-Dichloroethylene	0.007	0.007
para-Dichlorobenzene	0.075	0.075
1,1,1-Trichloroethane	0.20	0.20
Trichloroethylene	0	0.005
Vinyl Chloride	0	0.002
o-Dichlorobenzene	0.6	0.6
cis-1,2 Dichloroethylene	0.07	0.07
trans-1-2- Dichloroethylene	0.1	0.1
1,2-Dichloropropane	0	0.005
Ethylbenzene	0.7	0.7
Monochlorobenzene	0.1	0.1
Styrene	0.1	0.1
Tetrachloroethylene	0	0.005
Toluene	1	1
Xylenes (total)	10	10

\*\*\*\*\* Note: Please see next page for chart which had to be  
reduced to fit on page below (page 4 of enclosure 1) \*\*\*\*



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3. Contaminant levels for organic chemicals, pesticides, and polychlorinated biphenyls (PCBs) (effective 1 January 1993).

<sup>1</sup> The MCL for total trihalomethanes applies only to water systems serving 10,000 or more individuals and which add a disinfectant

3. Contaminant levels for organic chemicals, pesticides, and polychlorinated biphenyls (PCBs) (effective 1 January 1993).

Contaminant	MCLG mg/L	MCL mg/L
Endrin	0.002	0.002
Lindane	0.0002	0.0002
Methoxychlor	0.04	0.04
Toxaphene	0	0.003
2,4-D	0.07	0.07
2,4-5-TP (Silvex)	0.05	0.05
Alachlor	0	0.002
Atrazine	0.003	0.003
Carbofuran	0.04	0.04
Chlordane	0	0.002
1,2-Dibromo-3-chloropropane (DBCP)	0	0.0002
Ethylene dibromide (EDB)	0	0.00005
Heptachlor	0	0.0004
Heptachlor epoxide	0	0.0002
PCBs (as decachlorobiphenyl)	0	0.0005
Aldicarb	0.001	0.003
Aldicarb sulfoxide	0.001	0.004
Aldicarb sulfone	0.001	0.002
Pentachlorophenol	0	0.001
Total Trihalomethanes (the sum of the concentrations of Bromodichloromethane Dibromochloromethane, Tribromomethane (bromoform), and Trichloromethane (chloroform)		0.10 <sup>1</sup>

to the water. For systems serving less than 10,000 individuals, individual States or BUMED (in overseas locations) may adopt an effective date for the MCL.

4. Coliform Bacteria

a. The MCL for coliform bacteria (also called total coliforms) is based on the presence or absence of total coliforms in a sample rather than on an estimate of coliform density.

b. The MCL for potable water systems analyzing at least 40 samples each month: No more than 5.0 percent of the monthly samples may be total coliform-positive.

c. The MCL for systems analyzing fewer than 40 samples each month: No more than one sample each month may be total coliform-positive.

d. Monitoring and Analytical Requirements

(1) Public water systems must collect total coliform samples at sites which are representative of water throughout the distribution system. Sampling must be accomplished according to a written sampling plan. The monitoring frequency and number of routine samples required for total coliform monitoring are based on the population served by the system and the type of water source, i.e., groundwater, surface water, etc. Reference (d) contains sampling requirements for the Navy public water system.

(2) The standard sample volume for microbiological analyses must be 100 milliliters.

(3) Approved methods of microbiological analysis include the Autoanalysis Coli-ert System, also called the Minimum Media ONPG-MUG (MMO-MUG) Test; the Presence-Absence (PA) Coliform Test; the Multiple-Tube Fermentation (MTF) Technique, and the Membrane Filter (MF) Technique. A step-by-step microbiological test procedure for shipboard use is included in reference (1).

e. Repeat Monitoring

(1) A set of three repeat samples for each total coliform-positive routine sample must be collected. One repeat sample must be collected from the same tap as the original total coliform-positive sample, the other repeat samples must be collected from within five service connections of the original total coliform-positive sample. At least one sample must be upstream and the other downstream. These repeat samples must be collected within 24 hours of being notified of the positive result of the original sample, except where the State waives this requirement on a case-by-case basis.

(2) If a total coliform-positive sample is at the end of the distribution system, or one service connection away from the end of the distribution system, the State may waive the requirement to collect at least one sample upstream or downstream of the original positive sampling site.

(3) If total coliforms are detected in any repeat sample, the system must collect another set of repeat samples, as before, unless the MCL has been violated and the system has notified the State (in which case the State may reduce or eliminate the requirement to take the remaining samples).

(4) If any routine or repeat sample is total coliform-positive, it must also be analyzed to determine if fecal coliforms are present, except that the system may test for E. coli in lieu of fecal coliforms. The State has the discretion to allow a water system, on a case-by-case basis, to forgo fecal coliform or E. coli testing on total coliform-positive samples if the system treats every total coliform-positive sample as fecal coliform positive or E. coli positive and complies with all requirements which apply when a sample is fecal coliform-positive.

5. Turbidity. The MCL for turbidity applies to both community water systems and noncommunity water systems using surface water sources in whole or in part. The MCL for turbidity in drinking water measured at representative entry points to the distribution system is:

a. One turbidity unit for monthly average (5 turbidity units monthly may apply at State option).

b. Five turbidity units (maximum) average for 2 consecutive days.

c. These requirements apply to filtered systems until 29 June 1993. The requirements apply to unfiltered systems that the State has determined, in writing, must install filtration until 29 June 1993 or until filtration is installed whichever is later. After the above dates, consult the latest edition of 40 CFR 141.

6. The MCL for Radiological Contaminants are:

Gross alpha particle activity including radium 226

but excluding radon and uranium .....15 pCi/L

Combined radium-226 and radium 228.....5 pCi/L

Tritium.....20,000 pCi/L

Strontium-90.....8 pCi/L

Note: Screening indicators have been established for radiological contaminants. Gross alpha present at less than or equal to 5 pCi/L, as an indicator, eliminates the need to analyze for

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radium 226 and 228. Gross beta present at less than or equal to 8 pCi/L, as an indicator, eliminates the need to analyze for tritium and strontium-90.

7. Sodium and Corrosivity. No MCLs have been published; however, monitoring is required.

NATIONAL SECONDARY DRINKING WATER REGULATIONS (NSDWR)

Secondary Maximum Contaminant Levels

Contaminant	MCL (mg/L)
Aluminum	0.05 to 0.02
Chloride	250
Color	15 color units
Copper	1
Corrosivity	Noncorrosive
Fluoride	2
Foaming Agents	0.5
Iron	0.03
Manganese	0.05
Odor	3 threshold odor number
pH	6.5 - 8.5
silver	0.1
Sulfate	250
Total dissolved solids (TDS)	500
Zinc	5

Note: The contaminants covered by this regulation are those that may adversely affect the aesthetic quality of the drinking water. These secondary levels represent goals for drinking water quality but are not Federally enforceable. Individual States may establish higher, lower, or no levels for these contaminants. All Navy and Marine Corps facilities must provide drinking water of the highest quality in consonance with the NSDWR as well as the Federally enforceable NPWDR.